Exhibit A
WORK STATEMENT

TECHNICAL TASK LIST

Task #	CPR	Task Name
1	N/A	Administration
2	X	Extend Conceptual Model Framework for Energy Development
3		Data Development and Management
4	X	Model Development for Solar Energy Projects
5		Review and Enhancement of Desert Tortoise Demographic Models
6		Development of Web Application

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Nathan Strout – RI	Cat Darst – USFWS	USFWS DTRO
2	Nathan Strout – RI Naicong Li - RI	Cat Darst – USFWS Philip Murphy – InfoHarvest,	USFWS, DTRO SAC
3	Nathan Strout - RI	Philip Murphy – InfoHarvest,	BLM, USFWS, CDFG, SAC
4	Nathan Strout – RI Naicong Li - RI	Cat Darst – USFWS Philip Murphy – InfoHarvest,	USFWS, DTRO SAC
5	Nathan Strout – RI	Cat Darst – USFWS Philip Murphy – InfoHarvest,	USFWS, DTRO SAC
6	Nathan Strout – RI	Cat Darst – USFWS Philip Murphy – InfoHarvest,	USFWS DTRO

GLOSSARY

Specific terms and acronyms used throughout this Statement of Work are defined as follows:

Term/ Acronym	Definition
BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CPR	Critical Project Review
DoD	Department of Defense
DTRO, SAC	USFWS Desert Tortoise Recovery Office and Science Advisory Committee
Energy Commission	California Energy Commission
EMDS	Ecosystem Management Decision Support System
GIS	Geographic Information System, Geographic Information Science
NPS	National Park Service
PAC	Project Advisory Committee
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration

Term/ Acronym	Definition
RI, Institute	Redlands Institute, University of Redlands
SDS, SDSS	Spatial Decision Support, Spatial Decision Support System
USFWS	U.S. Fish and Wildlife Service

Problem Statement:
The University of Redlands, the U.S. Fish & Wildlife Service's Desert Tortoise Recovery Office and InfoHarvest, Inc. are developing a comprehensive Geographic Information Science (GIS) based tool that provides a cumulative view of recovery information for the desert tortoise. This spatially-explicit decision support system (SDSS) will allow resource managers and other users to better understand, evaluate, and monitor the cumulative effects, beneficial and adverse, of various activities, management actions, and policies on listed species. The system currently focuses on desert tortoise, a federally and state-listed species, because the tortoise is both an indicator and flagship species for the Mojave desert ecosystem, and is central to many conflicts over desert land use, including the current debate over solar energy development.

With funding from the California Energy Commission, the project partners will expand the current system under development and increase and focus its utility for evaluating impacts of solar energy projects on the desert tortoise, and quantifying mitigation options to offset those impacts. The project partners will work collaboratively with partner agencies, stakeholders, and the Desert Tortoise Recovery Office's Science Advisory Committee (DTRO SAC) to identify additional data sets, develop and review conceptual and system models, and integrate these into the SDSS and web application.

This project addresses multiple issues related to biological impacts and mitigation of utility-scale solar energy development in California's deserts in order to help inform the process of solar project siting and development. Specifically, this research will address Targeted Research, Development and Demonstration Areas: (A) assess alternative mitigation strategies; (B) facilitate evaluation of impacts; (D) improve demographic modeling of desert tortoise; and (E) provide a framework for cumulative impacts analyses of solar energy development on desert tortoise.

The research efficiently leverages the data, knowledge, and tools under development in the desert tortoise SDSS to address the immediate need to evaluate impacts and mitigation for solar energy projects. This project builds on 10+ years of collaborative research on the Mojave Desert Tortoise by the project partners through funding from the U.S. Fish and Wildlife Service (USFWS) and the Department of Defense/Army Research Office. An adaptive management approach is unique in applying spatial decision support to special-status species recovery and mitigation planning in the Mojave. The system already has been used in support of the revised draft Desert Tortoise Recovery Plan.

Goals of the Agreement:
The goal of this Agreement is to reduce environmental conflict over solar energy development by providing access to sound and transparent scientific information and

decision support technology on the potential threats, impacts, and mitigation actions affecting desert tortoises in the California Mojave desert. The project partners will achieve this goal by extending and enhancing the current desert tortoise SDSS to address spatial and temporal impacts of solar energy projects. The ultimate product will be a web-based framework for conducting spatially-explicit and fully-documented cumulative impacts analyses of solar energy projects on the Mojave desert tortoise so that users can make better, science-based decisions to promote natural resource conservation while facilitating the permitting of renewable energy projects in the desert.

Objectives of the Agreement:
The objectives of this Agreement are to: 1) improve existing impact and recovery models to evaluate the cumulative increase in stress score from direct/indirect impacts of solar energy development on the desert tortoise at the project-specific scale; 2) assess the relative recovery value of management actions for the desert tortoise by estimating their offsetting reductions in stress score; 3) provide monitoring metrics for all recommended recovery actions for project proponents, which can be used to evaluate effectiveness of implemented mitigation actions; and 4) develop tools to allow users to upload GIS data or sketch the spatial footprint and define key attributes of the proposed solar project and suggested recovery actions to evaluate their own potential impacts and mitigation scores.

Product Guidelines:
For complete product guidelines, refer to Section 5 in the Terms and Conditions.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Project Manager, the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Commission Project Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Project Manager will provide an agenda to all potential meeting participants.

  The administrative portion of the meeting shall include, but not be limited to, the following:
  - Discussion of the terms and conditions of the Agreement
  - Discussion of Critical Project Review (Task 1.2)
  - Match fund documentation (Task 1.6)
  - Permit documentation (Task 1.7)

The technical portion of the meeting shall include, but not be limited to, the following:

- The Commission Project Manager's expectations for accomplishing tasks described in the Statement of Work
- An updated Schedule of Products
- Discussion of Progress Reports (Task 1.4)
- Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Discussion of the Final Report (Task 1.5)

The Commission Project Manager shall:

- Designate the date and location of this meeting.

Recipient Products:

- Updated Schedule of Products (no draft)
- Updated List of Match Funds (no draft)
- Updated List of Permits (no draft)

Commission Project Manager Product:

- Kick-Off Meeting Agenda (no draft)

Task 1.2 Critical Project Review (CPR) Meetings

The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Project Manager and as shown in the Technical Task List above. However, the Commission Project Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Commission Project Manager and the Recipient and may include the Commission Grants Officer, the Public Interest Energy Research (PIER) Program Team Lead, other Energy Commission staff and Management as well as other individuals selected by the Commission Project Manager to provide support to the Energy Commission.

The Commission Project Manager shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this

meeting will be a schedule for providing the written determination described below.

- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see the Terms and Conditions). If the Commission Project Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Energy Commission's Research, Development and Demonstration (RD&D) Policy Committee for its concurrence.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this Statement of Work. The Recipient shall submit these documents to the Commission Project Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Commission Project Manager Products:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Recipient Product:

- CPR Report(s) (no draft)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

  This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Project Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Project Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Commission Project Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Project Manager and the Grants Officer about the following Agreement closeout items:

- What to do with any equipment purchased with Energy Commission funds (Options)
- Energy Commission's request for specific "generated" data (not already provided in Agreement products)
- Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
- "Surviving" Agreement provisions, such as repayment provisions and confidential Products
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement

Products:

- Written documentation of meeting agreements (no draft)
- Schedule for completing closeout activities (no draft)

Task 1.4 Quarterly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Quarterly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Project Manager within 15 business days of the end of the reporting period. The recommended specifications for each progress report are contained in the terms and conditions of this Agreement.

Product:

- Quarterly Progress Reports (no draft)

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving its goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further RD&D projects and improvements to the PIER project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

Task 1.5.1 Final Report Outline

The Recipient shall:

- Prepare a draft outline of the Final Report.
- Submit the draft outline of Final Report to the Commission Project Manager for review and approval. The Commission Project Manager will provide written comments back to the Recipient on the draft outline within 10 working days of receipt. Once agreement has been reached on the draft, the Recipient shall submit the final outline to the Commission Project Manager. The Commission Project Manager shall provide written approval of the final outline within 5 working days of receipt.

Products:

- Draft Outline of the Final Report
- Final Outline of the Final Report

Task 1.5.2 Technical Editor and Peer Reviewers

The Recipient shall:

- Acquire services of a technical editor who is capable of preparing the final report in exact accordance with the latest version of the PIER Style Manual published at the Energy Commission's web site: http://www.energy.ca.gov/contracts/pier/contractors/index.html
- Acquire services of three independent technical peer reviewers with expertise in the subject matter of the final report. The Commission Project Manager will provide approval of the proposed technical reviewers within 10 working days. Any technical reviewers rejected by the Commission Project Manager must be replaced within 10 working days.

Products:

- Written documentation showing that arrangements have been made for a Technical Editor to prepare the final report in exact accordance with the latest version of the PIER Style Manual.
- Name and resume of the Technical Editor.
- Names and resumes of three technical reviewers.

Task 1.5.3 Final Report

The Recipient shall:

- Prepare the draft Final Report for this Agreement in accordance with the approved outline and using the Technical Editor to ensure accordance with the latest version of the PIER Style Manual published at the Energy Commission's web site: http://www.energy.ca.gov/contracts/pier/contractors/index.html.
- Submit the draft Final Report to the (3) technical peer reviewers for comments.
- Submit the draft Final Report and the results of the peer reviews electronically to the Commission Project Manager for review and comment. The Commission Project Manager will provide written comments within 30 working days of receipt.
- Once agreement on the draft Final Report has been reached and the draft has been prepared in exact accordance with the latest version of the PIER Style Manual, the Commission Project Manager shall forward the electronic version of this report for Energy Commission internal approval. Once the approval is given, the Commission Project Manager shall provide written approval to the Recipient within 5 working days.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Draft Final Report
- Comments On Draft Final Report From Three Technical Peer Reviewers (no draft)
- Final Report

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of PIER funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement

and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
    - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied
    - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Project Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Project Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR.

Products:

- A letter regarding match funds or stating that no match funds are provided (no draft)
- Copy(ies) of each match fund commitment letter(s) (if applicable) (no draft)
- Letter(s) for new match funds (if applicable) (no draft)
- Letter that match funds were reduced (if applicable) (no draft)

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditures for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
  - A list of the permits that identifies the:
    - Type of permit
    - Name, address and telephone number of the permitting jurisdictions or lead agencies
- The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Project Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Project Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Project Manager within 5 working days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required (no draft)
- A copy of each approved permit (if applicable) (no draft)
- Updated list of permits as they change during the term of the Agreement (if applicable) (no draft)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) (no draft)

Tasks 1.8 and 1.9 Expert Consultation

This research focuses on providing access to better scientific and decision models and technology to support improved understanding of environmental impacts from solar energy projects. Professional advice and feedback on the research can be achieved efficiently and cost-effectively through presentations and communications with various partners, stakeholders and the existing DTRO SAC. The Recipient will also engage in individual and group meetings with stakeholders at appropriate points in the project schedule.

Task 1.8 Workshops with Partner Agencies and Stakeholder Groups

The goal of this task is to present the research to, and receive expert feedback from, various agency partners and stakeholder groups involved with the development of solar energy projects and their potential environmental impacts on the desert tortoise. The Recipient will host 3 workshops to consult on the lexicon and conceptual model development, as well as data acquisition, at around 6 months from the project start. It is anticipated that they will take place in 1) Barstow, 2) Ontario, and 3) Palm Springs, CA. Each one-day workshop will include presentations of the working models and current data, followed by formal, facilitated discussions of suggested improvements and recommendations.

The Recipient shall:

- Conduct 3 workshops, anticipated to take place in 1) Barstow, 2) Ontario, and 3) Palm Springs, CA to present research and solicit feedback from interested partners and stakeholders at around 6 months from the project start date. This includes:
  - Preparing a list of potential participants to attend each presentation;
  - Sending invitations and meeting information, and arranging logistics;
  - Facilitating the presentation and discussion during the meeting; and
  - Summarizing meeting results.
- Provide the following to the Commission Project Manager (CPM):
  - List of potential participants and agenda
  - Workshop presentation(s) (Slides or outline)
  - Summary of attendees and discussion from the three meetings

Products:

- List of potential participants and agenda (no draft)
- Workshop presentation(s) (no draft)
- Summary of meeting attendees and discussions (no draft)

Task 1.9 Workshops with DTRO SAC

The goal of this task is to present the Recipient's research to and receive expert advice and feedback from the DTRO Science Advisory Committee. Two workshops are anticipated to take place in Southern California to consult with the DTRO SAC on the underlying models for solar development and the improved desert tortoise demographic model employed in the SDSS. The first meeting will be approximately three months from the project start date and the second will be one year later; each workshop will follow a format similar to the workshops in Task 1.8 above.

The Recipient shall:

- Conduct 2 workshops in Southern CA to present research and solicit feedback from DTRO SAC, around 3 months and 15 months into the project. This includes:
  - Sending invitations and meeting information, and arranging logistics;
  - Facilitating the presentation and discussion during the meeting; and
  - Summarizing meeting results.

- Provide the following to the CPM:
  - List of potential participants
  - Workshop presentation(s) (Slides or outline)
  - Summary of attendees and discussion from both meetings

Products:

- List of potential participants and agenda for 1st workshop (no draft)
- Workshop presentation(s) for 1st workshop (no draft)
- Summary of 1st workshop discussions (no draft)
- List of potential participants and agenda for 2nd workshop (no draft)
- Workshop presentation(s) for 2nd workshop (no draft)
- Summary of 2nd workshop discussions (no draft)

TECHNICAL TASKS

TASK 2 EXTEND CONCEPTUAL MODEL FRAMEWORK FOR ENERGY DEVELOPMENT

The current desert tortoise SDSS includes a comprehensive concept model framework based on biological and decision science, which provides a classification and registration structure for SDS system components including Threats, Stresses, Population Change Factors, and Recovery Actions. This framework underlies all relationships and calculations within the SDSS. The pieces of the concept model dealing with energy development will be extended to fully capture all terms and concepts relating to solar energy development and offsets in California.

The Recipient shall:

- Provide to the CPM a written summary, matrix, and diagrams that describe the extent of the current SDSS lexicon and conceptual model framework, as well as new information and areas developed under this research project for solar energy development.
- Develop the existing framework with appropriate partners and experts (see Tasks 1.8 and 1.9) and incorporate these parameters, drivers, and relationships into the SDSS. Provide a summary of the extended lexicon and conceptual model framework with an emphasis in solar energy projects.
- Participate in a CPR and write CPR report as per Task 1.2

Products:

- Written summary, matrix, and diagrams (no draft)
- Written summary of extended lexicon and conceptual model framework (no draft)

TASK 3 DATA DEVELOPMENT AND MANAGEMENT

The goal of this task is to develop, acquire, integrate and manage additional GIS and scientific data to support the extension of the current SDSS system to encompass the

specific impacts and mitigation activities related to solar energy projects in the California desert. Particular attention will be paid to obtaining project, threats and recovery data of sufficient resolution to support feasible threat offset calculations. This will involve collaboration with data providers such as the Bureau of Land Management (BLM), the California Department of Fish and Game (CDFG), the environmental consultant community, and others, to acquire and manage these data and facilitate data sharing.

The Recipient shall:

- Work with data providers to acquire/access relevant data sets, through this task, and through the workshops mentioned in Task 1.8 above.
- Provide the CPM with an inventory of the data sets currently in the SDSS and added through this research project. This list will include data source and a brief description of the data set.
- Develop data and perform quality control to integrate new data sets with existing data in the geodatabase and with SDSS models and analyses. Provide the CPM with a written summary of the data integration.

Products:

- Inventory of data sets (no draft)
- Written summary of data integration (no draft)

TASK 4 MODEL DEVELOPMENT FOR SOLAR ENERGY PROJECTS

The goal of this task is to further develop and extend the current models within the SDSS to encompass specific threats, recovery actions, and mitigations related to solar energy development projects. Since there may be potential future changes in proposed energy development alternatives as well as proposed recovery actions/mitigation measures, this model extension will be developed in the context of an SDS system architecture that accommodates scenario-based simulation and scenario management.

The Recipient shall:

- Develop a more detailed energy development sub model as part of the SDSS threat impact calculation model.
- Develop a sub model for simulating the effect of energy development related mitigation actions which are location specific.
- Develop a scenario manager that manages different proposed energy development alternatives and different mitigation action alternatives.
- Provide to the CPM a written report summarizing all activities under this task that includes:
  - A description of the evolution of the solar energy project models, and how they relate to existing models in the SDS system; and
  - A description of extended models addressing threats, recovery actions and mitigations related to solar energy development projects
- Participate in a CPR and write CPR report as per Task 1.2

Products:

- Description of solar energy project models evolution, and their relation to existing models (no draft)
- Description of extended models (no draft)

TASK 5 REVIEW AND ENHANCEMENT OF DESERT TORTOISE DEMOGRAPHIC MODELS

The goal of this task is to analyze and synthesize existing demographic data to develop a revised population viability model for desert tortoises that will improve the demographic calculations within the SDSS. This work will be led by a USFWS DTRO researcher. The resulting formal demographic model will be integrated into the SDSS to improve analysis and assessment of cumulative and long-term impacts of solar energy projects and mitigation strategies on desert tortoise populations.

The Recipient shall:

- Work with USFWS DTRO to engage a demographic researcher to assemble, analyze, and synthesize existing demographic data to develop a population viability model for desert tortoises. The researcher will:
  - Lead preparation of manuscripts and technical reports for publication,
  - Travel to meet with cooperators and to participate in field sampling.
- Provide a draft of researcher generated manuscripts and technical reports to the CPM.
- Integrate the population demographic models into the SDS scenario manager, for use in stress offset calculations.
- Provide written report summarizing all activities done under this task that includes:
  - A summary of the research conducted by the demographic researcher; and
  - A description of the improved demographic model in the SDSS.

Products:

- Draft manuscripts/technical reports (no draft)
- Summary of the demographic researcher's research (no draft)
- Description of improved SDSS demographic model (no draft)

TASK 6 DEVELOPMENT OF WEB APPLICATION

The goal of this task is to design and develop a web-based application to facilitate access to desert tortoise threat and recovery information such as data, maps, and reports as well as the use of SDSS models and functionality, through a standard web browser for authenticated users. The application will be developed and deployed in iterative phases so that features are available for use, feedback can be addressed, and enhancements integrated over the life of the project. While a host for the system has not yet been determined, the most likely hosts include the Mojave Data Ecosystem Program (MDEP), US Fish and Wildlife Service, or the University of Redlands. The

system is being designed and developed with a distributed architecture in mind so the most likely scenario involves a combination of these agencies with appropriate roles and responsibilities. The Energy Commission will not be responsible for hosting any components of the system. The final application will include elements that support users, such as online help documentation, user forums, and bug reporting features.

The Recipient shall:

- Work with partners and stakeholders to define the functional and non-functional requirements of the system.
- Work with partners and stakeholders to design use cases and user interfaces (website & tool design).
- Design and build the server-side map and processing services for the application.
- Design and build the required user interfaces and logic to support simple and intuitive interaction with the complex nature of the underlying SDSS.
- Provide the CPM, partners and stakeholders access to iterative “beta” releases of the application for review and feedback.
- Document the web application system design and code and provide to the CPM
- Provide the web application service, tool, and front-end code for PIER-funded tasks to the CPM.
- Access to web application and services unless data or services are otherwise protected (system host(s) likely MDEP, U.S. Fish and Wildlife Service, or the University of Redlands

Products:

- Demonstrations of iterative “beta” releases (no draft)
- Web application design and code documentation (no draft)
- Web application service, tool, and front-end code (no draft)